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ABSTRACT

This document presents information about the apprenticeship training program of Alberta, Canada, in general and the lather-interior systems mechanic program in particular. The first part of the document discusses the following items: Alberta's apprenticeship and industry training system; the apprenticeship and industry training committee structure; local apprenticeship committees; provincial apprenticeship committees; the Alberta Apprenticeship and Industry Training Board; safety education; legal and administrative aspects of safety; technical training establishment; procedures for recommending revisions to the course outline; the apprenticeship route toward certification as a lather-interior systems mechanic; and a lather-interior systems mechanic training profile. The second part of the document presents course outlines for the first, second, and third periods of technical training. Selected topics covered in the three periods are as follows: construction safety; construction project organization; construction safety regulations; hand and power tools; scaffolding; wall construction materials and erection; metal framing; furring systems on existing walls; application or installation of insulation in walls and ceilings; sheathing; building paper; stucco wire; stucco coatings; application, layout, and installation; ceilings; precast plaster and reinforced gypsum; drawing instruments and techniques; blueprints; and trade calculations. The course outlines detail course topics, intended outcomes, specific behavioral objectives, and times allotted for each topic covered. A list of textbooks and supplies is also included. (MN)

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APPRENTICESHIP TRAINING

ED 481 360

LATHER-
INTERIOR SYSTEMS MECHANIC
Program

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Lather-Interior Systems Mechanic

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Apprenticeship and Industry Training System

Apprenticeship is post-secondary education with a difference. It helps ensure Alberta has a steady supply of highly-skilled employees, the foundation of our economy's future health and competitiveness.

Apprentices in more than 50 trades and crafts spend between one and four years learning their trade - 80% of the time on the job under the supervision of a certified journeyman or qualified tradesperson. The balance of the program is technical training in the theory, skills and technologies of their trade.

To become certified journeymen apprentices must learn theory and skills, and they must pass examinations. Requirements for certification—including the content and delivery of technical training—are developed and updated by the Alberta Apprenticeship and Industry Training Board (the Board) and a network of local and provincial industry committees.

The graduate of the Lather-Interior Systems Mechanic apprenticeship training is a journeyman who will:

- Know the characteristics and understand the actions and interactions of Lathing and Interior Systems Mechanic materials.
- Interpret plans and specifications and layout and develop projects accordingly.
- Calculate material quantities.
- Use hand tools and powered equipment in a proper and safe manner.
- Construct various types of walls and ceilings and apply exterior and interior trim of metal and other material.
- Relate to the work of other tradesmen in the building industry.
- Perform assigned tasks in accordance with quality and production standards required in industry.

Apprenticeship and Industry Training Committee Structure

While government supports Alberta's apprenticeship and industry training system, it is driven by industry, a term which includes both employers and employees. The Alberta Apprenticeship and Industry Training Board, with the support of Alberta Learning, oversees the system. But the system relies on a network of industry committees. These committees include local and provincial apprenticeship committees (LACs and PACs) in the designated trades and occupational committees in the designated occupations, as well as other committees such as provisional committees established before the designation of a new trade or occupation comes into effect. All these committees are composed of equal numbers of employers and employees. The network of industry committees is the foundation of Alberta's apprenticeship and industry training system.

Local Apprenticeship Committees (LAC)

Wherever there is activity in a trade, the Board can set up a LAC. The Board appoints equal numbers of employees and employers for terms of up to three years. The committee appoints a member as presiding officer. Local Apprenticeship Committees:

- monitor the apprenticeship system, and the progress of apprentices in their trade, at the local level.
- help settle certain kinds of issues between apprentices and their employers.
- recommend improvements in apprenticeship training and certification to their trade's provincial apprenticeship committee.
- make recommendations to the Board regarding the appointment of members to their trade's PAC.

Provincial Apprenticeship Committees (PAC)

The Board establishes a PAC for each trade and, based on PAC recommendations, appoints a presiding officer and equal numbers of employees and employers for terms of up to three years. Most PACs have nine members. Provincial Apprenticeship Committees:

- identify the training needs and content for their trade.
- recommend to the Board the standards for training and certification for their trade.
- monitor the activities of local apprenticeship committees in their trade.
- make recommendations to the Board about the designation of trades and occupations.
- determine whether training of various kinds is equivalent to training provided in an apprenticeship program in the trade.
- may participate in resolving any apprenticeship-related disputes between employers and employees.

Lather-Interior Systems Mechanic PAC Members

Mr. R. Orrell	Edmonton	Presiding Officer
Mr. H. Gertz	Edmonton	Employer
Mr. L. Hupka	Edmonton	Employer
Mr. D. Wiebe	Edmonton	Employer
Mr. B. Derkson	Edmonton	Employee
Mr. D. Dunlop	Calgary	Employee
Mr. L. Wunderlich	Calgary	Employer

The Alberta Apprenticeship and Industry Training Board (Board)

The mandate of the Alberta Apprenticeship and Industry Training Board relates to the standards and requirements for training and certification in programs under the *Apprenticeship and Industry Training Act*. The Board provides advice to the Minister of Learning on the training and certification of people in designated trades and occupations and on the needs of the Alberta labour market for skilled and trained persons. The Board also makes orders and regulations respecting standards and requirements for apprenticeship programs and the training of apprentices and for training and certification in designated trades and occupations, and the criteria or requirements for granting and recognizing trade and other certificates.

The 13-member Board consists of a chairman, eight members representing trades and four members representing other industries. The trades and other industry members are equally represented by employer and employee representatives.

Safety Education

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance in apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of government, employers, employees and the public. Therefore, it is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to or cause an accident or injury.

It is generally recognized that a safe attitude contributes to an accident free environment. Everyone will benefit as a result of a healthy, safe attitude towards prevention of accidents.

A tradesperson is possibly exposed to more hazards than any other person in the work force and, therefore, should be familiar with and apply the Occupational Health and Safety Act and Regulations dealing with personal safety and the special safety rules applying to each task.

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Legal and Administrative Aspects of Safety

Accident prevention and the provisions of safe working conditions are the responsibilities of an employer and employee.

Employer's Responsibilities

The employer is responsible for:

- providing and maintaining safety equipment, and protective devices and clothing.
- enforcing safe working procedures.
- providing safeguards for machinery, equipment and tools.
- observing all accident prevention regulations.
- training employees in the safe use and operation of equipment.

Employee's Responsibilities

The employee is responsible for:

- working in accordance with the safety regulations pertaining to the job environment.
- working in such a way as not to endanger themselves or fellow employees.

Workplace Health and Safety's Responsibilities:

Workplace Health and Safety (Alberta Human Resources and Employment) will conduct periodic inspections of the workplace to ensure that safety regulations for industry are being observed.

Technical Training Establishment

Alberta Learning, Apprenticeship and Industry Training offer your apprenticeship training program. Staff and facilities for delivering the program are supplied by the Northern Alberta Institute of Technology

Procedures For Recommending Revisions To The Course Outline

Apprenticeship and Industry Training, Industry Programs and Standards has prepared this course outline in partnership with the Lather-Interior Systems Mechanic Provincial Apprenticeship Committee.

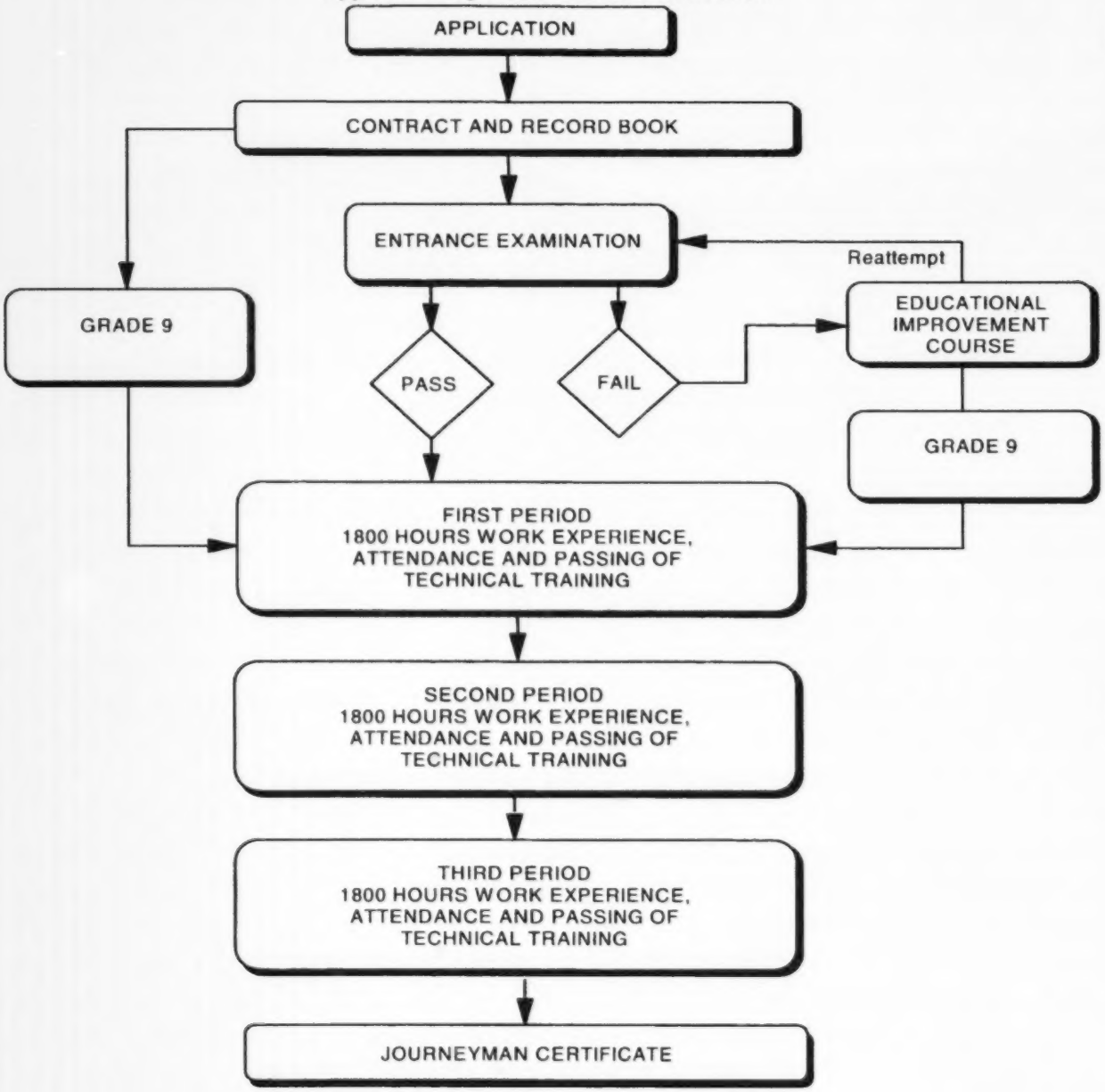
This course outline was approved on March 07, 2003 under the authority of the Alberta Apprenticeship and Industry Training Board on a recommendation from the Provincial Apprenticeship Committee. Valuable input is acknowledged from industry and the institutions.

Any concerned citizen or group in the Province of Alberta may make recommendations for change by writing to:

Lather-Interior Systems Mechanic Provincial Apprenticeship Committee
c/o Industry Programs and Standards
Apprenticeship and Industry Training
10th floor, Commerce Place
10155 - 102 Street
Edmonton, AB T5J 4L5

It is requested that recommendations for change refer to specific areas and state references used. Recommendations received will be placed before regular meetings of the Provincial Apprenticeship Committee.

Apprenticeship Route Toward Certification



Lather-Interior Systems Mechanic Training Profile

First Period

(8 weeks, 30 Hours per week – Total of 240 Hours)

SECTION ONE

CODES, REGULATIONS AND GENERAL SAFETY
18 Hours

- **A** — Apprenticeship System — 4 Hours
- **B** — Construction Safety — 3 Hours
- **C** — Project Organization — 3 Hours
- **D** — Study of Regulations — 4 Hours
- **E** — Fire Prevention And Controls — 1 Hour
- **F** — Introduction To WHMIS — 3 Hours

SECTION TWO

TOOLS, EQUIPMENT AND MATERIALS
17 Hours

- **A** — Hand And Power Tools — 4 Hours
- **B** — Scaffolding — 4 Hours
- **C** — Materials — 3 Hours
- **D** — Explosive Actuated Tools — 6 Hours

SECTION THREE

WALLS
45 Hours

- **A** — Various Types And Specifications — 2 Hours
- **B** — Materials and Erection — 8 Hours
- **C** — Metal Framing — 21 Hours
- **D** — Furring Systems On Existing Walls — 4 Hours
- **E** — Preparations For Other Trades — 4 Hours
- **F** — Application or Installation of Insulation In Walls And Ceilings — 6 Hours

SECTION FOUR

EXTERIOR STUCCO PREPARATION
8 Hours

- **A** — Sheathing — 2 Hours
- **B** — Building Paper — 2 Hours
- **C** — Stucco Wire — 2 Hours
- **D** — Stucco Coatings — 2 Hours

SECTION FIVE

DRYWALL APPLICATIONS
18 Hours

- **A** — Application, Layout and Installation — 18 Hours

SECTION SIX

DRYWALL CEILINGS (DIRECT CONTACT, FURRED AND SUSPENDED CEILINGS
16 Hours

- **A** — Materials Selections, Layout and Fabrication — 16 Hours

SECTION SEVEN

COMPONENT CEILING SYSTEMS — **33 Hours**

A	B	C
Component Ceilings — 23 Hours	Metal Linear Ceiling Systems — 6 Hours	Component Baffles — 4 Hours

SECTION EIGHT

DEMOUNTABLE PARTITION SYSTEMS — **13 Hours**

A
Components and Installation — 13 Hours

SECTION NINE

SPECIALIZED SYSTEMS — **8 Hours**

A	B
Pre-cast Plaster and Reinforced Gypsum — 4 Hours	Component Wall Treatment and Baffles — 4 Hours

SECTION TEN

SHOP DRAWINGS — **36 Hours**

A	B	C
Drawing Instruments and Techniques — 8 Hours	Freehand Sketch — 8 Hours	Drawing to Specifications — 8 Hours

D
Blueprint Interpretation — 12 Hours

SECTION ELEVEN

TRADE MATHEMATICS — **28 Hours**

A	B	C
Basic Applied Mathematics — 12 Hours	Trade Problems from Basic Plans and Specifications — 12 Hours	Metric Systems — 4 Hours

SECOND PERIOD

(6 Weeks, 30 Hours Per Week – Total Of 180 Hours)

SECTION ONE

FIRE RESISTIVE AND ACCOUSTICAL RATINGS — **8 Hours**

A	B
Fire And Sound Ratings — 4 Hours	Wall And Ceiling Designs — 4 Hours

SECTION TWO

WIND/LOAD BEARING WALL AND FLOOR SYSTEMS — **20 Hours**

A	B
Wind Bearing Framing Systems — 12 Hours	Composite Metal Floor Systems And Load Bearing Walls — 8 Hour

SECTION THREE

METAL LATH PARTITIONS, WALLS, AND CEILINGS — **8 Hours**

A
Fabricating Of Metal Lath Partitions, Walls, And Ceilings — 8 Hours

SECTION FOUR

SHAFT WALL SYSTEMS — **6 Hours**

A
Fabricating Of Shaft Wall Systems — 6 Hours

SECTION FIVE

USE OF JIGS AND TEMPLATES — **20 Hours**

A
Development And Fabrication Of Various Types — 20 Hours

SECTION SIX

COMPONENT CEILING SYSTEMS — **14 Hours**

A	B
Concealed Suspension Ceiling System — 2 Hours	Reveal Grid And Ceiling Tile System — 12 Hours

SECTION SEVEN

SPECIALTY CEILINGS — 20 Hours

- A — Materials And Installation — 20 Hours

SECTION EIGHT

DEMOUNTABLE PARTITION SYSTEMS — 12 Hours

- A — Components — 12 Hours

SECTION NINE

AIR AND MOISTURE BARRIERS — 8 Hours

- A — Application Of Air And Moisture Barriers — 6 Hours
- B — Barrier Failures — 2 Hours

SECTION TEN

EXTERIOR INSULATION FINISH SYSTEMS (EIFS) — 16 Hours

- A — Panalization — 2 Hours
- B — On-Site Application — 14 Hours

SECTION ELEVEN

SHOP DRAWINGS — 14 Hours

- A — Amplifying Drawings With Notes — 4 Hours
- B — Freehand Pictorial Drawings — 5 Hours
- C — Specified Shop Projects — 5 Hours

SECTION TWELVE

BLUEPRINT READING — 22 Hours

- A — Blueprints For Commercial Buildings — 12 Hours
- B — Isolating The Lather – Interior Systems Mechanic Work — 10 Hours

SECTION THIRTEEN

TRADE MATHEMATICS — 12 Hours

- A — Trade Calculations — 12 Hours

THIRD PERIOD

(8 Weeks, 30 Hours Per Week – Total Of 240 Hours)

SECTION ONE

ADVANCED CEILING SYSTEMS — 56 Hours

- A — Adjustments And Adaptations From Regular Layouts — 3 Hours
- B — Component Ceilings — 3 Hours
- C — Groined Drywall And Domed Metal Lath Ceiling — 24 Hours
- D — Specialty Ceilings — 15 Hours
- E — Development And Use Of Jigs And Templates — 4 Hours
- F — Trim And Finishing Components — 7 Hours

SECTION TWO

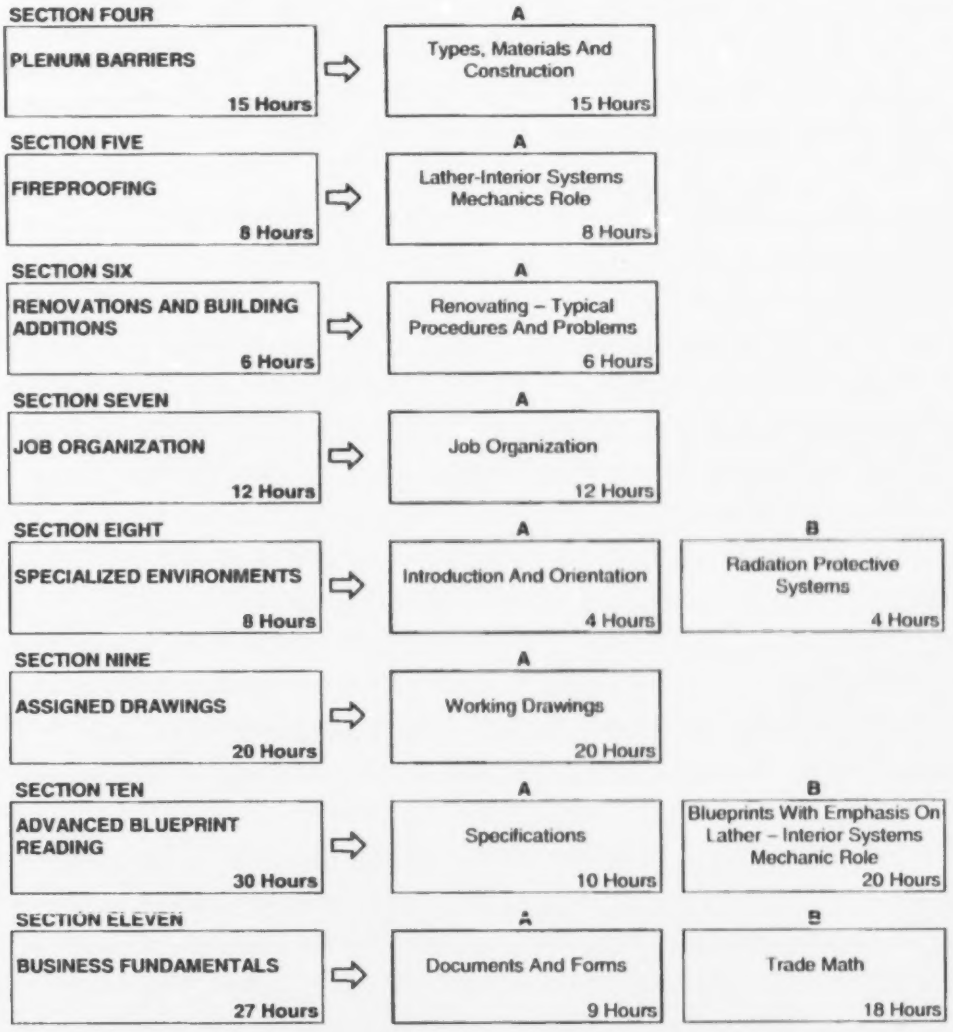
WALLS — 18 Hours

- A — Demountable Partition Systems — 18 Hours

SECTION THREE

ACCESS FLOOR SYSTEMS — 10 Hours

- A — Types And Construction Methods — 10 Hours



The hours stated are for guidance and should be adhered to as closely as possible. However, adjustments must be made for rate of apprentice learning, statutory holidays, registration and examinations for the training establishment and Apprenticeship and Industry Training.

FIRST PERIOD TECHNICAL TRAINING

LATHER-INTERIOR SYSTEMS MECHANIC TRADE
COURSE OUTLINE

SECTION ONE ..... CODES, REGULATIONS AND GENERAL SAFETY ..... 18 HOURS

A. Apprenticeship System ..... 4 Hours

Outcome: ***Explain the role and purpose of the advisory network and Provincial Apprenticeship Committee structure for the Lather/ISM trade.***

1. Describe the structure and purpose of provincial and local apprenticeship committees.
2. State the process involving the Contract of Apprenticeship and Record Book.
3. Outline the Training Profile for the Lather/ISM Trade.
4. Be aware of the need for compliance with Apprenticeship Act and Regulations.

B. Construction Safety ..... 3 Hours

Outcome: ***Demonstrate knowledge of codes, regulations and general safety.***

1. Reference to the National Building Code and the Alberta Building Code.
2. Explain the function of Canadian Standards Association and the Underwriters Laboratories of Canada.
3. Identify and observe Occupational Health and Safety regulations, as they pertain to the Lather - ISM trade.
4. Be familiar with procedures, application forms, calculations, etc. within the various Acts and Regulations.
   a) Income Tax
   b) Workers Compensation
   c) Holiday pay
   d) Employment Insurance

C. Project Organization ..... 3 Hours

Outcome: ***Explain the roles and responsibilities within the industry.***

1. Explain the role of the owner, architects and engineers.
2. Explain the role of the general contractor.
3. Discuss sub-trades and how Lather - Interior Systems Mechanic must work with each.
4. Explain the role of the Lather and Interior Systems Mechanic.
5. Explain the responsibilities of the employer, supervisor and employee.

D. Study of Regulations.....4 Hours

Outcome: ***Understand construction safety regulations.***

1. Discuss first aid and regulations with reference to emergency procedures and obtaining assistance for an injured worker.
2. Describe the procedures for obtaining first aid certificate.
3. Outline the regulations for general accident prevention:
   a) general safety precautions.
   b) housekeeping.
   c) personal protective equipment.
   d) clothing.
   e) safety belts, lifelines, safety nets
   f) respiratory protective equipment.
4. Specify the construction safety regulations for:
   a) wooden construction ladders
   b) protection from falling materials
   c) material hoists
   d) scaffolds - general
   e) ramps, runaways and stairways
   f) rolling scaffold and self-propelled
   g) suspended and swing stage scaffolds
   h) perimeter guard rails
   i) power man lift
   j) asbestos abatement
   k) general electrical safety
   l) laser lights in construction.

E. Fire Prevention and Controls.....1 Hour

Outcome: ***Explain fire prevention techniques.***

1. Identify the classes of fires and the acceptable extinguishers.
2. Define the critical areas in construction.

F. Introduction to W.H.M.I.S. (Workplace Hazardous Materials Information System).....3 Hours

Outcome: ***Ability to handle hazardous materials safely.***

1. Define what a WHMIS label means and distinguish between supplier and workplace labels and other means of identification.
2. Explain what a Material Safety Data Sheet (MSDS) is, its purpose and limitations.
3. Describe the roles and responsibilities of employer, supplier and worker in the education of workers.

SECTION TWO: ..... TOOLS, EQUIPMENT AND MATERIALS ..... 17 HOURS

A. Hand And Power Tools.....4 Hours

Outcome: ***Select, use and maintain hand and power tools.***

1 Discuss tools with emphasis on: names and working parts

2. Demonstrate tool safety.
3. Discuss typical and occasional job applications.
4. Recognize the components, assembly, types, sizes, and the care, maintenance and safe use of:
   a) measuring tools
   b) layout tools
   c) gypsum cutting tools
   d) metal cutting tools
   e) crimping and riveting tools
   f) spirit and hydro leveling tools
   g) boring tools
   h) bending and tying tools
   i) impact tools
   j) screw driving tools
   k) sharpening tools
   l) power extension cords and polarity plugs
   m) caulking tools
   n) laser instruments.

B. Scaffolding ..... 4 Hours

Outcome: ***Erect, use and dismantle scaffolding.***

1. Describe the typical and occasional job applications.
2. Discuss ladders.
3. Describe rolling and motorized scaffolds.
4. Describe the erection and dismantling of typical scaffolding used in industry.

C. Materials ..... 3 Hours

Outcome: ***Select materials for use on the job site***

1. Describe the metal types and gauges.
2. Explain the composition of gypsum and its manufacturers.
3. Explain the acceptable temperatures for set-up of gypsum and other adhesives.
4. Describe the typical and special fasteners.
5. Discuss the common causes of breakage and damage.
6. Outline the housekeeping practices.
7. Explain point loading.

D. Explosive Actuated Tools ..... 6 Hours

Outcome: ***Use and maintain low velocity explosive activated tools.***

1. Describe low velocity tools, how they operate and the different types of fasteners and charges.
2. Demonstrate operation and explain the relationship between pins, charges and materials.
3. Discuss the hidden features of fastening surfaces.

4. Discuss servicing and storage of tools and supplies, and the disposal of misfired charges.
5. Demonstrate the pre-firing routine and the actual firing of a low velocity tool.

SECTION THREE: ..... WALLS ..... 45 HOURS

A. Various Types And Specifications .....2 Hours

Outcome: ***Identify the different walls used in the trade.***

1. Differentiate between bearing, non-bearing, prefabricated and shaft walls.

B. Materials And Erection .....8 Hours

Outcome: ***Select and install materials.***

1. Identify the use of floor and ceiling channels.
2. Choose stud types and spacing.
3. Identify the layout and aligning methods.
4. Describe securing systems.
5. Describe bracing procedures.
6. Explain how to establish wall openings.
7. Install backing systems.

C. Metal Framing .....21 Hours

Outcome: ***Layout and install metal framing.***

1. Demonstrate the following:
   a) floor layout
   b) floor and ceiling runners
   c) plumbing and aligning procedures
   d) various metal stud types - load bearing and nonload bearing
   e) bracing procedures
   f) intersecting walls
   g) window, door and access openings
   h) installation of frames
   i) resilient sound bars.

D. Furring Systems On Existing Walls .....4 Hours

Outcome: ***Install a furring system.***

1. Describe the correct spacing.
2. Describe shimming and securing procedures.
3. Describe the securing systems required.
4. Describe furring procedures on concrete and masonry walls.

E. Preparations For Other Trades ..... 4 Hours

Outcome: ***Install backing and recessed openings for other trades.***

1. Describe the installation of backing and brackets for
   a) electrical fixtures
   b) plumbing fixtures
   c) wood or metal cabinets.
2. Prepare opening for fire hose cabinets and recessed fixtures.

F. Application or Installation of Insulation in Walls and Ceilings ..... 6 Hours

Outcome: ***Select and install insulation.***

1. Explain the types and thickness of insulation.
2. Explain and install vapour barriers.
3. Identify how to secure or fasten insulation.
4. Explain heat transfer and heat loss.
5. Comprehend attenuation and absorption.
6. Install insulation:
   a) batt type
   b) rigid type.

SECTION FOUR: ..... EXTERIOR STUCCO PREPARATION ..... 8 HOURS

A. Sheathing ..... 2 Hours

Outcome: ***Select and apply sheathing.***

1. Identify wood sheathing and application.
2. Identify exterior gypsum and application
3. Select and use fasteners.

B. Building Paper ..... 2 Hours

Outcome: ***Select and apply building paper.***

1. Differentiate between:
   a) asphalt impregnated
   b) air barrier paper.
2. Select and use building paper.
3. Select and use flashing.

C. Stucco Wire ..... 2 Hours

Outcome: ***Select and apply stucco wire.***

1. Describe standard welded wire and standard welded wire paper backed stucco wire.
2. Select and use stucco wire.

D. Stucco Coatings ..... 2 Hours

Outcome: ***Be aware of different stucco coatings.***

1. Differentiate among:
   a) scratch
   b) brown
   c) finish.
2. Discuss finish stucco for:
   a) stone dash
   b) decorative uses.

SECTION FIVE: ..... DRYWALL APPLICATIONS ..... 18 HOURS

A. Application, Layout And Installation ..... 18 Hours

Outcome: ***Select and install drywall systems.***

1. Discuss the use of single layer drywall:
   a) apply single layer gypsum;
   b) identify the location and spacing for nails and screws.
2. Explain standard lamination:
   a) apply standard lamination gypsum;
   b) identify the location and spacing for nails and screws;
   c) prepare and apply adhesives.
3. Specify where to use nails, screws, adhesives, etc.
4. Properly make dimension selection. (Thickness and length)
5. Describe patterns or sequence of joints.
6. Measure and cut to size.
7. Locate and cut out openings and outlets.
8. Describe how and where to apply backing board.

SECTION SIX ..... DRYWALL CEILINGS (DIRECT CONTACT, FURRED, AND SUSPENDED) ..... 16 HOURS

A. Material Selections, Layout and Fabrication ..... 16 Hours

Outcome: ***Select and install drywall-ceiling systems.***

1. Build projects that include the use of inserts, hangers, eye pins, nails, screws, clips and bolts.
2. Select and install carrying and secondary channels.

3. Establish elevations with laser, hydro levels (including reservoir type).
4. Outline and demonstrate bending and tying techniques.
5. Develop and install bracing systems.
6. Describe how to lift and secure heavy sheets.
7. Describe the material thickness for various joists, truss and channel spacings.
8. Bend and form channels.
9. Layout and fabricate openings to receive:
   a) electrical fixtures
   b) access panels.
10. Layout and fabricate:
    a) vertical drops and returns
    b) false beams.

SECTION SEVEN:..... COMPONENT CEILING SYSTEMS ..... 33 HOURS

A. Component Ceilings .....23 Hours

Outcome: ***Select and install component ceiling systems.***

1. Describe ceiling board and tile, with reference to:
   a) composition types
   b) edge details
   c) physical properties - noise reduction, coefficiency and sound transmission class.
2. State the classifications of the Underwriters Laboratories of Canada:
   a) fire hazard
   b) fire resistive.
4. Explain suspension systems with exposed grid
5. Describe cement-up applications and prepare cement-up with:
   a) layout
   b) technique for adhesion application.
6. Install an exposed modular grid with:
   a) layout.
   b) vertical ceiling drops and returns.
   c) open peripheral details.
7. Discuss and determine fire resistive requirements for fixture enclosures and duct openings.

B. Metal Linear Ceiling Systems .....6 Hours

Outcome: ***Select and install metal linear systems.***

1. Describe and construct metal linear suspension systems and beams.
2. Describe and use steel and plastic filler strips.
3. Describe the use of insulation pads.
4. Discuss and layout:
   a) hangers
   b) interfacing with electrical and mechanical
   c) peripheral detail.

5. Demonstrate cutting methods of:
   a) power mitre saws
   b) metal cutting hand tools.
6. Describe vertical ceiling returns.
7. Describe framing and furring of wall surfaces.
8. Explain the differences between interior and exterior applications.

B. Component Baffles ..... 4 Hours

Outcome: ***Select and install baffle systems.***

1. Install steel studs along with the insulation, caulking and gypsum board.

SECTION EIGHT: .....DEMOUNTABLE PARTITION SYSTEMS ..... 13 HOURS

A. Components and Installation ..... 13 Hours

Outcome: ***Select and install demountable partition systems.***

1. Define and use progressive systems and components.
   a) Discuss and use battenless referring to framing, patent fasteners, board and trimming material.
2. Define and use nonprogressive systems and components.
   a) Discuss and use battenless and refer to framing, patent fasteners, board and trimming materials.
   b) Discuss and use batten referring to framing, board and trimming materials.
3. Recognize the physical properties with emphasis on:
   a) sound transmission class and gasketing
   b) fire resistive applications.
4. Describe and install the following:
   a) ceiling track details
   b) steel and aluminum door frames
   c) steel and aluminum glazed frames
   d) corners
   e) terminations
   f) intersections
   g) vinyl and fabric panels
   h) base details
   i) components systems differences.

SECTION NINE: .....SPECIALIZED SYSTEMS..... 8 HOURS

A. Precast Plaster and Reinforced Gypsum..... 4 Hours

Outcome: ***Install precast plaster systems.***

1. State the physical properties.
2. Discuss the delivery, storage and handling.
3. Discuss on-site installation.
4. Explain tolerances (erected units).

5. Describe the methods for patching and cleaning.
6. Describe procedures for caulking precast plaster.
7. Describe procedures for finishing precast plaster.
8. Use correct installation techniques for:
   a) columns
   b) coffers
   c) cornices and valances.

B. Component Wall Treatment And Baffles ..... 4 Hours

Outcome: Install component wall treatment and baffle systems.

1. Discuss the following types and usage of:
   a) wall panels
   b) ceiling panels
   c) baffles and screens
   d) special panels.
2. Explain the typical layout and installation:
   a) layout
   b) elevations
   c) mounting.
3. Fasten component baffles to existing ceiling systems and structures.

SECTION TEN: ..... SHOP DRAWINGS ..... 36 HOURS

A. Drawing Instruments and Techniques ..... 8 Hours

Outcome: Select and use drawing instruments and techniques.

1. Explain object, extension, centre, hidden and break lines.
2. Use drawing instruments to draw lines.
3. Use drawing instruments to draw numbers and upper case lettering.

B. Freehand Sketch ..... 8 Hours

Outcome: Draw a freehand sketch.

1. Make simple drawings of trade symbols.
2. Make basic drawings as an aid to understanding glossaries

C. Drawing To Specifications ..... 8 Hours

Outcome: Interpret drawings to construct details.

1. Make basic orthographic and isometric drawings.
2. Draw plans and elevation views for projects.

D. Blueprint Interpretation ..... 12 Hours

Outcome: ***Interpret blueprints to construct a project.***

1. Read plan, elevation and section views.
2. Isolate Lather - Interior System Mechanic items on plans.
3. Understand the scope and responsibilities of other trades.
4. Draw reflected ceiling plans.

SECTION ELEVEN: ..... TRADE MATHEMATICS ..... 28 HOURS

A. Basic Applied Mathematics ..... 12 Hours

Outcome: ***Perform calculations on the jobsite.***

1. Do mathematical problems in addition, multiplication, division, subtraction.
2. Calculate common and decimal fractions.
3. Calculate linear, area and volume measurements.
4. Calculate ratios and proportions.
5. Calculate percentages.

B. Trade Problems From Basic Plans and Specifications ..... 12 Hours

Outcome: ***Estimate material quantities.***

1. Calculate linear footage of perimeters, partition layouts, etc. in regular and irregular outlines.
2. Calculate studs, channels, fasteners, bracing, rough openings, etc. in wall layouts of various types and spacings.
3. Calculate areas of rectangular, square and triangular shapes.
4. Determine numbers of gypsum sheets, bundles of gypsum and metal lath, etc. from various areas.
5. Calculate pounds, lots, and areas of fasteners.
6. Show extra cutting and waste through poor or improper selection of materials on site.
7. Convert stated elevations to working feet and inches, squaring by 3-4-5 system, etc.
8. Calculate layout, locations and quantities of hangers, inserts, eye pins, carrying and secondary channels, bracing, etc. for typical suspended ceilings.

C. Metric Systems ..... 4 Hours

Outcome: ***Use and convert metric measurements.***

1. Convert various units of measure.

SECOND PERIOD TECHNICAL TRAINING

LATHER-INTERIOR SYSTEMS MECHANIC TRADE
COURSE OUTLINE

Due to the nature of the work of the Lather - Interior Systems Mechanic, it is imperative that safety be taught on a continuous basis throughout the entirety of this course.

Special emphasis should be placed on weak areas of theory and shop that are evident from progressive tests and examinations administered throughout the course. The time required for such examinations and testing shall be allowed for in each area of instruction

SECTION ONE: ..... FIRE RESISTIVE AND ACCOUSTICAL RATINGS ..... 8 HOURS

A. Fire and Sound Ratings.....4 Hours

Outcome: ***Interpret ratings to select appropriate materials and methods for assemblies.***

1. Discuss the National Research Council.
2. Explain decibels.
3. Comprehend sound transmission.
4. Comprehend flame spread.
5. Comprehend heat transmission.
6. Comprehend smoke controls.

B. Wall And Ceiling Designs.....4 Hours

Outcome: ***Interpret designs to select appropriate materials and methods for assemblies.***

1. Recognize non-combustible materials used.
2. Describe the treatment of wall cavities.
3. Discuss sound bars and barriers.
4. Discuss sealants, etc.
5. Recognize probable causes of smoke and sound leakage through minute cracks, access openings, etc.

SECTION TWO: .....WIND/LOAD BEARING WALL AND FLOOR SYSTEMS..... 20 HOURS

A. Wind Bearing Framing Systems.....12 Hours

Outcome: ***Install wind bearing walls and associated framing.***

1. Layout & install load bearing framing.
2. Install framing at openings.
3. Install bracing & channels with clips.
4. Install slip track.

5. Install fasteners.

B. Composite Metal Floor Systems and Load Bearing Walls ..... 8 Hours

Outcome: ***Install floor system.***

1. Install composite metal floor panels or framing system with fasteners.
2. Install end closures, perimeter trims & straps.
3. Install shoring.

SECTION THREE: ..... METAL LATH PARTITIONS, WALLS AND CEILINGS ..... 8 HOURS

A. Fabricating Of Metal Lath Partitions, Walls, And Ceilings ..... 8 Hours

Outcome: ***Be able to install metal lath.***

1. Explain the make-up of studded walls.
2. Identify where metal lath is specified.
3. Give the advantages and limitations.
4. Describe and install ceiling and floor runners.
5. Describe plumbing and aligning procedures.
6. Describe vertical members.
7. Describe metal lath.
8. Describe bead stops and expansion joints.
9. Install:
   a) control joints
   b) expansion joints
   c) corner beads
   d) plaster stops.

SECTION FOUR: ..... SHAFT WALL SYSTEMS ..... 6 HOURS

A. Shaft Wall Fabrication ..... 6 Hours

Outcome: ***Be able to install a shaft wall system.***

1. Discuss the fire rating value.
2. Plumb and align system.
3. Layout shaft wall system
4. Describe openings and frames.
5. Install coreboard to predetermined specifications.
6. Install finish layer as specified.

SECTION FIVE: .....USE OF JIGS AND TEMPLATES ..... 20 HOURS

A. Development And Fabrication of Various Types .....20 Hours

Outcome: ***Develop and use jigs and templates.***

1. Explain the purpose, materials and design when used for:
   a) beam
   b) columns
   c) pilasters
   d) soffits
   e) coves, curved surfaces
   f) temporary and reusable types.
2. Develop jigs and templates for:
   a) beams
   b) soffits
   c) columns
   d) pilasters
   e) coves, curved surfaces.

SECTION SIX: ..... COMPONENT CEILING SYSTEMS ..... 14 HOURS

A. Concealed Suspension Ceiling System.....2 Hours

Outcome: ***Select components of, and install a concealed suspension ceiling system.***

1. Describe concealed suspension systems including:
   a) tee
   b) metal pans.

B. Reveal Grid And Ceiling Tile Systems .....12 Hours

Outcome: ***Select components of, and install a reveal grid and ceiling tile system.***

1. Describe exposed reveal systems with:
   a) exposed tee, reveal edge ceiling board
   b) reveal grid, reveal edge ceiling board
   c) differences between various grid systems and profiles.
2. Layout system in accordance with peripheral details.
3. Install grid and ceiling board.
4. Construct vertical ceiling drops and slope returns.
5. Explain interfacing with electrical and mechanical.

SECTION SEVEN:.....SPECIALTY CEILINGS..... 20 HOURS

A. Materials and Installation.....20 Hours

Outcome: ***Select and install specialty-ceiling systems.***

1. Describe various types of specialty ceilings (i.e. Axiom, Compasso, Curvatura etc.).
2. Explain reflective finishes - refer to:
   a) cutting
   b) handling and storage.
3. Describe and install curved ceilings, referring to:
   a) sub-framing
   b) templates and jigs.
4. Discuss and install angular ceilings referring to:
   a) layout
   b) suspension system framing.
5. Discuss and locate penetrations for:
   a) interfacing with electrical
   b) interfacing with mechanical.

SECTION EIGHT: .....DEMOUNTABLE PARTITION SYSTEMS ..... 12 HOURS

A. Components.....12 Hours

Outcome: ***Select and install demountable door and glazing frames.***

1. Install full height door frames, complete with door stop prepared for hinge installation.
2. Install full height glazing sections.
3. Install demountable partition systems with emphasis on:
   a) layout
   b) framing
   c) head details
   d) trim details
   e) mullion details
   f) transom details.

SECTION NINE: ..... AIR AND MOISTURE BARRIERS ..... 8 HOURS

A. Application Of Air and Moisture Barriers .....6 Hours

Outcome: ***Install air and moisture barriers.***

1. List and describe principles and fundamentals.
2. Describe types of air and moisture barriers including:
   a) conventional polyethylene barrier
   b) self adhesive modified
   c) asphalt sheet - peel and stick
   d) torch-on.
3. Describe tools and equipment used in preparation and application.

4. Demonstrate application procedure including:
   a) conventional polyethylene
   b) self adhesive modified asphalt sheet - peel & stick.

B. Barrier Failures ..... 2 Hours

Outcome: ***Recognise defective and/or improper applications.***

1. Describe softening point of bitumen.
2. Describe the effect of overheating barriers.
3. List and describe compatibility of material.

SECTION TEN: ..... EXTERIOR INSULATION FINISH SYSTEMS (EIFS) ..... 16 HOURS

A. Panelization ..... 2 Hours

Outcome: ***Fabricate and install pre-manufactured panels.***

1. Describe panelization and installation procedures.
2. Describe on-site fabrication.

B. On-site Application ..... 14 Hours

Outcome: ***Select and install EIFS systems***

1. Develop the layout.
2. Install exterior sheathing and fasteners.
3. Explain purpose of flashing.
4. Install insulation board to sheathing with adhesives and/or mechanical fasteners.
5. Embed reinforcing mesh to insulation board.
6. Apply finish coat. Referencing thickness, type of finish and colours available.

SECTION ELEVEN: ..... SHOP DRAWINGS ..... 14 HOURS

A. Amplifying Drawings with notes ..... 4 Hours

Outcome: ***Add detail notes to drawings.***

1. Amplify drawings with notes.

B. Freehand pictorial drawings ..... 5 Hours

Outcome: ***Draw a detailed freehand sketch.***

1. Draw quick freehand pictorial drawings for clarification of details, notes.

a) chases
b) curtain walls
c) anchors
d) baffles
e) lintels
f) corbels, haunches.

C. Specified Shop Projects ..... 5 Hours

Outcome: ***Produce a working drawing to build a class project.***

1. Draw blueprints for shop projects

SECTION TWELVE: ..... BLUEPRINT READING ..... 22 HOURS

A. Blueprints For Commercial Buildings ..... 12 Hours

Outcome: ***Interpret a complete set of blueprints (working drawings) to construct a project.***

1. Read:
   a) site plans
   b) structural plans
   c) mechanical plans
   d) architectural plans
   e) foundation plans
   f) electrical plans.

B. Isolating the Lather - Interior Systems Mechanic work ..... 10 Hours

Outcome: ***Determine the scope of work from a blueprint (working drawing).***

1. Read and interpret:
   a) specifications
   b) plan views and notes
   c) room finish schedules
   d) section and detail views
   e) elevations
   f) reflected ceiling plans.

SECTION THIRTEEN: ..... TRADE MATHEMATICS ..... 12 HOURS

A. Trade Calculations ..... 12 Hours

Outcome: ***Layout a project and calculate material quantities required.***

1. Calculate problems dealing with layouts, material sizes, quantities for false beams, soffits, etc.
2. Calculate layout patterns, material, types and quantities for:
   a) control joints
   b) expansion joints
   c) patented ceilings
   d) stepped ceilings
   e) fire rated walls

f) sound rated walls.

3. Calculate layout and material quantities for circular and elliptical project:
   a) domed ceilings
   b) groined ceilings
   c) arches
   d) angles
   e) curves.

THIRD PERIOD TECHNICAL TRAINING

LATHER-INTERIOR SYSTEMS MECHANIC TRADE
COURSE OUTLINE

Due to the nature of the work of the Lather - Interior Systems Mechanic, it is imperative that safety be taught on a continuous basis throughout the entirety of this course.

Special emphasis should be placed on weak areas of theory and shop that are evident from progressive tests and examinations administered throughout the course. The time required for such examinations and testing shall be allowed for in each area of instruction.

PRACTICAL EXAMINATION ..... 30 HOURS
Every apprentice will be required to build an in shop practical project. This project will be assessed by representatives from industry and the marks obtained will be a major consideration in awarding completion of apprenticeship and journeyman status

SECTION ONE: .....ADVANCED CEILING SYSTEMS..... 56 HOURS

A. Adjustments And Adaptations From Regular Layouts.....3 Hours

Outcome: ***Adapt methods to compensate for irregular jobsite conditions.***

1. Identify adjustments and adaptations for:
   a) mechanical concealment
   b) vertical steps
   c) sloping and curved surfaces
   d) extra securing and reinforcing for special loads
   e) valences, recesses for electric fixtures
   f) access openings, sky lights, false beams, chases, etc.

B. Component Ceilings.....3 Hours

Outcome: ***Identify and install coffered ceilings.***

1. Explain the installation of integrated coffered ceilings
   a) at columns.
   b) at drywall peripheral suspended ceilings.

C. Groined Drywall And Domed Metal Lath Ceiling.....24 Hours

Outcome: ***Install groined drywall and domed metal lath ceilings.***

1. Layout curves to specific measurements.
2. Secure metal and/or gypsum base or finish materials
3. Explain scaffold systems.
4. Establish elevations, levels, radii and diameters.
5. Bend, form and secure channels.
6. Install beads, casings, etc.

D. Specialty Ceilings ..... 15 Hours

Outcome: ***Identify and install specialty ceilings.***

1. Identify and install a specialty ceiling.

E. Development And Use Of Jigs And Templates ..... 4 Hours

Outcome: ***Develop and use complex jigs and templates.***

1. Develop and use the following jigs and templates:
   a) rectangular
   b) curved
   c) circular
   d) irregular.

F. Trim And Finishing Components ..... 7 Hours

Outcome: Select and install trims

1. Apply trim and finishing components to curved, circular and irregular surfaces:
   a) beads
   b) perimeter moulds
   c) casings
   d) stops
   e) expansion and control joints.

SECTION TWO: ..... WALLS ..... 18 HOURS

A. Demountable Partition and Unitized Wall Systems ..... 18 Hours

Outcome: ***Identify and install advanced pre-manufactured wall systems.***

1. Describe a cornice height partition and refer to:
   a) framing
   b) bracing
   c) door and glazing header details.
2. Describe curved radii corner details.
3. Identify the following types:
   a) nonprogressive flush batten
   b) nonprogressive flush batten with recessed base and head.
4. Describe the following components:
   a) panel
   b) honeycomb core
   c) panel frame
   d) panel spline
   e) drywall membrane
   f) glazing units
   g) door units.

SECTION THREE:..... ACCESS FLOOR SYSTEMS ..... 10 HOURS

A. Types and Construction Methods .....10 Hours

Outcome: ***Identify and recognise construction methods.***

1. Describe each of the following types:
   a) rigid core
   b) free standing
   c) particle core panels
   d) steel panels
   e) pedestal
   f) stringers.
2. Describe the installation of:
   a) ramps
   b) handrails
   c) steps
   d) cutting methods.
3. Install steel panel in 1800/600 rigid grid system. Refer to:
   a) layout
   b) pedestals and stringers
   c) field panels
   d) peripheral cut panels.

SECTION FOUR: ..... PLENUM BARRIERS ..... 15 HOURS

A. Types, Materials and Construction .....15 Hours

Outcome: ***Identify and construct plenum barriers.***

1. Describe types of plenum barriers.
2. Install double layered gypsum board.
3. Install fibrous rigid insulation.
4. Install metal lath/ security mesh.

SECTION FIVE:..... FIREPROOFING..... 8 HOURS

A. Lathers-Interior Systems Mechanics Role.....8 Hours

Outcome: ***Recognise, comprehend and install specified fireproofing systems.***

1. Reference to ULC (Underwriters Laboratory of Canada) or other code requirements.
2. Explain the role in fabricating and preparing for gypsum coverings for structural steel.

SECTION SIX: ..... RENOVATIONS AND BUILDING ADDITIONS ..... 6 HOURS

A. Renovating - Typical Procedures And Problems ..... 6 Hours

Outcome: ***Identify, comprehend and deal with unique situations.***

1. Recognize asbestos, and abatement methods.
2. Describe existing services, cautions and disconnections.
3. Describe protection of existing floor, cabinets, etc.
4. Describe the removal of existing material and housekeeping.
5. Explain the layout and connection to existing walls
6. Explain temporary shores, bracing, hoarding, etc.
7. Recognise existing site conditions and jobs procedure in stages.

SECTION SEVEN: ..... JOB ORGANIZATION ..... 12 HOURS

A. Job Organization ..... 12 Hours

Outcome: ***Use basic estimating and job coordination skills to manage daily job flow.***

1. Refer to blueprints, drawings and specifications for typical and unusual job demands, the coordination of work loads with other trades and various other concerns arising.
2. Calculate areas and material quantities from a building blueprint.

SECTION EIGHT: ..... SPECIALIZED ENVIRONMENTS ..... 8 HOURS

A. Introduction and Orientation ..... 4 Hours

Outcome: ***Recognise hazards associated with specialized environments.***

1. Define units of radiation.
2. Give an introduction to biological effects and somatic effects. Refer to:
   a) effects on skin
   b) effects of sex cell irradiation
   c) effects upon the eye
   d) effects upon the blood
   e) effects upon the body as a whole.
3. Explain the genetic effects. Refer to:
   a) mutations
   b) doubling dose.
4. Discuss the sources of radiation exposure:
   a) leakage
   b) primary
   c) scatter.
5. Show a perspective of risk.
6. Explain personnel monitoring.

7. Use measures to minimize radiation exposure.
8. Discuss regulations and protection recommendations.

B. Radiation Protective Systems .....4 Hours

Outcome: Recognise and comprehend types of radiation shielding to integrate the job process.

1. Describe the following components:
   a) lead protective shielding
   b) framing and furring members
   c) fasteners
   d) adhesives
   e) accessories.
2. Discuss framing and installation for:
   a) layout
   b) corner details
   c) wall intersections
   d) ceiling intersections
   e) base intersections
   f) openings - door, window, transfer cabinet
   g) Explain testing: to ensure lead protective shielding provides full radiation protection for the specified project.

SECTION NINE: .....ASSIGNED DRAWINGS..... 20 HOURS

A. Working Drawings .....20 Hours

Outcome: Prepare working drawings to assist in layout and construction of special items.

1. Prepare working drawings for special detail items:
   a) domed or groined ceilings
   b) ceilings that incorporate recesses, troughs, steps, etc.

SECTION TEN: .....ADVANCED BLUEPRINT READING..... 30 HOURS

A. Specifications .....10 Hours

Outcome: Interpret specifications in order to determine the scope of work.

1. Study of a typical set of specifications, their scope and the determination of ambiguous or arbitrary sections.

B. Blueprints With Emphasis On Lather - Interior Systems Mechanic Role .....18 Hours

Outcome: Interpret and use a complete set of blueprints (working drawings) to complete a project.

1. Adjust from small scale plan views to large scale details.
2. Draw quick pictorial drawings in freehand for clarification.
3. Make calculations for assigned problem solving arising from blueprint study.

4. Recognise change orders, addendums, etc.

SECTION ELEVEN: ..... BUSINESS FUNDAMENTALS ..... 27 HOURS

A. Documents and Forms ..... 9 Hours

Outcome: ***Prepare/comprehend documentation pertaining to projects.***

1. Prepare or accept typical documents, forms, etc. including:
   a) delivery slips
   b) time sheets
   c) expense accounts
   d) business letters
   e) injury reports
   f) purchase orders, etc.

B. Trade Math ..... 18 Hours

Outcome: ***Make calculations from specifications or plans.***

1. Make calculations from specifications or plans that include:
   a) screens and hoarding
   b) removal of old work
   c) temporary shoring
   d) new material
   e) reusables
   f) scaffolding
   g) housekeeping
   h) off-site preparations
   i) penalty clauses.
2. Estimating with unit costs.

TEXTBOOKS AND SUPPLIES LIST

Apprentices are advised not to purchase any items listed below until after meeting their instructor in the first class. However, if you already own some items listed below bring them with you. Textbooks and some supplies may be purchased from the training institute offering the program; also additional funds may be required to purchase supplies, handouts, etc.

First Period

A. Textbooks

1. Metric Drawing Practices - DS 11 75
2. Building Trades - Blueprint Reading - Strinholm
3. Orthographic Projection Simplified by C. Quinlan - McKnight and McKnight - 2nd Edition

B. Supplies

1. One - 200 mm (8") 45° set square
2. One - 250 mm (10") 60° - 30° set square
3. One - 150 mm (6") compass c/w centre screw
4. One - 300 mm architectural scale (1:1, 1:2, 1:5, 1:10, 1:20, 1:50)
5. Suitable work clothing
6. One - metric hand tape measure
7. One padlock for student locker (bring on registration day)
8. One pocket calculator (minimum 4 function with square root)
9. Pencils 2H and 4H
10. Eraser - white plastic
11. CSA approved steel-toed footwear
    a) Hard hat
    b) Safety glasses

Second Period

A. Textbooks

1. Same as for first period

B. Supplies

1. Same as for first period.

Third Period

A. Textbooks

1. Same as for first period

B. Supplies

1. Same as for first period

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